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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,736	12/05/2005	Heinz Fabian	52201-06-44	1823
28481 7590 05/13/2009				
TIAJOLOFF & KELLY				
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405 LEXINGTON AVENUE				
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EXAMINER				
AZIZ, KETHI T				
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05/13/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/559,736

Applicant(s)

FABIAN, HEINZ

Examiner

KEITH T. AZIZ

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 14-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 12/5/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1-5, and 14-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected groups, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/06/2009.
2. Applicant's election without traverse of claims 6-13 in the reply filed on 4/06/2009 is acknowledged.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application 630864 (Takagi hereafter), in view of U.S. Patent 5,785,729 (Yokokawa hereafter).

Takagi discloses a fabrication process of polarization-maintaining optical fiber (see Title). Takagi teaches a method for producing an optical fiber surrounded by a quartz cladding (see Abstract), where a hole is mechanically bored through the quartz cladding (see lines 40-42 of column 1, as well as Figure 4). Takagi further teaches that an etching treatment is applied to the inner bore, with the treatment having different depths of roughness (see lines 9-17 of column 4). Takagi also teaches that the maximum depth of the subsurface cracks is roughly 8 μm (see the graphs in Figures 40-42). Takagi teaches that the etching process occurs in two steps, where one step treats to a roughness of 0 to 1 μm and another step treats to a roughness of 0 to 2 μm (see lines 9-17 of column 4), which is less than the maximum etching removal depth of 50 μm . Takagi further teaches that the roughness formed by etching treatment is understood to be a crack groove (see lines 27-37 of column 2).

Takagi does not explicitly disclose a mechanical etching treatment with a plurality of removal processes with successively smaller removal depths.

Yokokawa discloses a method for manufacturing large sized quartz glass tubes (see title). Yokokawa teaches that a honing machine is used to mechanically treat the quartz glass in a plurality of removal processes, with each having successively smaller removal depths (see lines 35-46 of column 14, as well as lines 11-27 of column 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the honing process of Yokokawa in the process of Takagi. The rationale to do so would have been the motivation to finish the tube at a high dimensional precision (see lines 11-27 of column 3).

With regard to claim 7, Takagi teaches that the etching process occurs in two steps, where one step treats to a roughness of 0 to 1 μm and another step treats to a roughness of 0 to 2 μm (see lines 9-17 of column 4), which is less than the maximum etching removal depth of 25 μm .

With regard to claim 8, Takagi teaches that the etching process occurs in two steps, where one step treats to a roughness of 0 to 1 μm and another step treats to a roughness of 0 to 2 μm (see lines 9-17 of column 4), which is less than the maximum etching removal depth of 10 μm .

With regard to claim 9, Takagi teaches that the etching process occurs in two steps, where one step treats to a roughness of 0 to 1 μm and another step treats to a roughness of 0 to 2 μm (see lines 9-17 of column 4), which can combine to a maximum etching roughness of 3 μm , and provides a range from 0 to 3 μm – which is more than the minimum etching removal depth of 2.5 μm .

With regard to claim 10, Takagi teaches an etching solution containing hydrofluoric acid (see lines 3-7 of column 2), as well as a solution containing nitric acid - which is referred to throughout the application as aqua regia (see lines 17-21 of column 3).

With regard to claim 11, Takagi teaches an etching rate of less than 3 $\mu\text{m}/\text{min}$ when using a solution of 5% hydrofluoric acid (see Figure 41), since roughly 4 μm have been etched over a 30 minute time period (again, see Figure 41). This rate of etching is roughly equivalent to 0.133 $\mu\text{m}/\text{min}$.

With regard to claim 12, Takagi teaches an etching rate of less than 3 $\mu\text{m}/\text{min}$ when using a solution of 5% hydrofluoric acid (see Figure 41), since roughly 4 μm have been etched over a 30 minute time period (again, see Figure 41). This rate of etching is roughly equivalent to 0.133 $\mu\text{m}/\text{min}$.

With regard to claim 13, Takagi teaches an etching rate that is roughly equivalent to 0.133 $\mu\text{m}/\text{min}$ (again, see Figure 41). Takagi does not expressly disclose an etching rate of 0.1 $\mu\text{m}/\text{min}$ or less. It has been held that when the difference between a claimed invention and the prior art is the range or value of a particular variable, then a *prima facie* rejection is properly established when the difference in the range or value is minor. See *Titanium Metals Corp of Am v Banner*, 778 F2d 775, 783, 227 USPQ 773, 779 (Fed Cir 1985). Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. See *In re Boesch*, 617 F2d 272, 205 USPQ 215 (CCPA 1980); *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and *In re Hoeschele*, 406 F2d 1403, 160 USPQ 809 (CCPA 1969). Further, it would have been obvious to one of ordinary skill in the art to reduce the etching rate from 0.133 $\mu\text{m}/\text{min}$ to 0.1 $\mu\text{m}/\text{min}$, since Takagi clearly teaches that the etching rate is proportionate to the concentration of hydrofluoric acid (again, see Figure 41). The rationale to do so would have been the common sense reasoning that reducing the etching rate would prevent excessive etching. Excessive etching is known to cause cross talk, through increasing surface roughness (see Figure 42), which negatively impacts performance and is known to be undesirable.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are made of record to show the state of the art with respect to glass etching.

U.S. Patent Application 2003/0230112 to Ikeda et al., drawn to a method for manufacturing a glass substrate.

U.S. Patent Application 2002/0121109 to Alta, drawn to a glass substrate processing method.

U.S. Patent Application 2002/007810 to Takeuchi et al., drawn to a silica glass substrate.

U.S. Patent Application 2001/0026997 to Henley et al., drawn to a method and device for controlled cleaving process.

U.S. Patent 6,131,415 to Chang et al., drawn to a method of making a fiber.

U.S. Patent 5,676,724 to Barre et al., drawn to a method of improving the geometrical shape of a glass tube.

U.S. Patent 5,198,008 to Thomas, drawn to a method for fabricating an optical interconnect structure.

U.S. Patent 4,898,777 to Kindler et al., drawn to a process for making fluoride glass fibers.

Japanese Patent 59-165005 to Watanabe, drawn to a method for producing an optical image fiber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH T. AZIZ whose telephone number is (571)270-7658. The examiner can normally be reached on Monday through Thursday 8:00am-6:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KTA/

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791